CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/BBU/W.No.01/CSR-11/486d/CEMENT/2017-18

Date: 10.11.201

TEST REPORT ON CEMENT

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Cement
Sample Received on	:	08.11.2017
Period of Testing	:	08.11.2017 to 10.11.2017

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988 (RA-2014)	30.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988 (RA-2014)	185 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988 (RA-2014)	470 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988 (RA-2014)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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****

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Technical Manager

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10.11.2017

Job No.: CTCE/BBMP/BBU/W.No.01/CSR-11/486d/SAND-Gradation/2017-18

TEST REPORT ON SIEVE ANALYSIS OF FINE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Fine Aggregates
Technical Reference	:	IS : 2386 (Part 1) - 1963 (RA-2011)
Sample Received On	:	08.11.2017
Date of Testing	:	10.11.2017

Total Wt. of Aggregates in gms = **1000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2011)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	93.90	90-100	90-100	90-100	95-100
2.36	72.40	60-95	75-100	85-100	95-100
1.18	47.60	30-70	55-90	75-100	90-100
600 Micron	25.00	15-34	35-59	60-79	80-100
300 Micron	13.30	5-20	8-30	12-40	15-50
150 Micron	4.80	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/BBU/W.No.01/CSR-11/486d/AGG/GR/2017-18

10.11.2017

TEST REPORT ON SIEVE ANALYSIS OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B.Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Coarse Aggregates (40mm)
Technical Reference	:	IS : 2386 (Part 1) -1963 (RA-2011)
Sample Received on	:	08.11.2017
Date of Testing	:	10.11.2017

Total Wt. of Aggregates in gms= **5000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2011)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	97.48	95-100	85-100
20	34.54	30-70	0-20
10	11.60	10-35	0-5
4.75	2.10	0-5	-

* Information is furnished by the Customer/Representative

Remarks : This sample is under graded specific limits.

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Job No.:CTCE/BBMP/BBU/W.No.01/Steel/2017-18

10.11.2017

TEST REPORT ON REINFORCEMENT STEEL

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**MMr. B.B.Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Samples ID	:	10 mm Bar
Technical Reference	:	IS: 1786-2008 (RA-2013)
Date of Testing	:	10.11.2017

Sl No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm2	Tensile strength (Ultimate stress) N/mm2	Elongation percent gauge length		
1	10	0.62	510	551	13.20	O.K	O.K

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Job No.: CTCE/BBMP/BBU/W.No.01/GSB-II/GR/2017-18 10.11.2017

TEST REPORT ON GRADATION FOR COARSE GRADED GARNULAR SUB BASE

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Coarse Graded-II
Technical Reference	:	IS : 2720 (Part - 4), MORTH Table : 400-02
Date of Testing	:	10.11.2017

Oven Dry Wt (gm) : 5000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
53	100	100	100	100	100
26.5	2210	2210	44.20	55.80	50-80
4.75	1500	3710	74.20	25.80	15-35
0.075	910	4620	92.40	7.60	0-10
PAN	380				
Total	5000				

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* Information is furnished by the Customer/Representative

Remarks: Satisfies MORTH Specifications as per Table 400-2, Grading II

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Job No.: CTCE/BBMP/BBU/W.No.01/GSB-II/AL/2017-18 Date 10.11.2017

TEST REPORT ON ATTERBERG LIMITS FOR GRANULAR SUB BASE

*Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
*Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
*Name of work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
*Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
Sample ID	:	GSB- (Coarse graded-II)
Technical Reference	:	IS : 2720 (Part - 5) 1985 (RA-2010), MORTH Table : 400-01
Date of Testing	:	10.11.2017

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	21.40	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CTCE/BBMP/BBU/W.No.01/WMM/Gradation/2017-18 10.11.2017

TEST REPORT ON GRADATION OF WET MIX MACADAM

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS 2386 (part-1)1963 (RA-2011)
Date of Testing	:	10.11.2017

Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-13
53	0	0	0	100	100
45	140	140	2.8	97.2	95-100
22.4	1450	1590	31.80	68.20	60-80
11.2	1050	2640	52.80	47.20	40-60
4.75	600	3240	64.80	35.20	25-40
2.36	525	3765	75.30	24.70	15-30
0.600	460	4225	84.50	15.50	8-22
0.075	500	4725	94.50	5.50	0-8

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Job No.: CTCE/BBMP/BBU/W.No.01/AIV/2017-18 10.11.2017

TEST REPORT ON IMPACT VALUE OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS : 2386(Part -4)-1963 (RA-2011)
Date of Testing	:	10.11.2017

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	301	
4	Aggregate Impact value = percent fines 100* (W2/W1)%	21.11	21.82	21.46

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/BBU/W.No.01/WMM/Shape.T/2017-18

10.11.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS 2386(Part 1) 1963 (RA 2011)
Date of Testing	:	10.11.2017

Sl.No.	Description	Result
1	Flakiness Index	12.05%
2	Elongation Index	13.40%
3	Combined Flakiness & Elongation Index	25.45%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/BBU/W.No.01/CSR-11/486d/Cube/2017-18

06.11.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of the work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Covering Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{15}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	06.11.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	15.11.2017	06.11.2017	8.263	374.5	16.64
2	15.11.2017	06.11.2017	8.152	382.4	17.00
3	15.11.2017	06.11.2017	8.394	400.5	17.80

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Job No.: CTCE/BBMP/BBU/W.No.01/CSR-11/486d/Cube/2017-18

06.11.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of the work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Drain Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	06.11.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	06.11.2017	06.11.2017	8.163	501.6	22.29
2	06.11.2017	06.11.2017	8.294	517.8	23.01
3	06.11.2017	06.11.2017	8.378	526.3	23.39

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Job No.: CTCE/BBMP/BBU/W.No.01/CSR-11/486d/Cube/2017-18

06.11.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of the work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Drain Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	06.11.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	06.11.2017	06.11.2017	8.085	496.2	22.05
2	06.11.2017	06.11.2017	8.394	508.1	22.58
3	06.11.2017	06.11.2017	8.412	519.2	23.08

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CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/BBU/W.No.01/CSR-11/486d/Cube/2017-18

06.12.2017

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	Mr. B. B. Umesh. No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of the work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Drain Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	06.12.2017

SLNo.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	08.11.2017	06.12.2017	8.168	487.2	21.65
2	08.11.2017	06.12.2017	8.247	492.1	21.87
3	08.11.2017	06.12.2017	8.410	500.4	22.24

*Information is furnished by the Customer/Representative.

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

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* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Drain Concrete
Technical Reference	:	IS: 516-1959 (RA-2013)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	06.12.2017

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	08.11.2017	06.12.2017	8.153	476.2	21.16
2	08.11.2017	06.12.2017	8.350	516.2	22.94
3	08.11.2017	06.12.2017	8.412	520.4	23.13

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Job No.:CTCE/BBMP/BBU/W.No.01/BM/Bitumen/2017-18 21.12.2017

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

As per IS2386 and IRC:SP:11-1984

*CUSTOMER	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
*AGENCY	Mr. B. B. Umesh. No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
*NAME OF THE WORK	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
*REFERENCE	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
SAMPLE I/D	roads at venakatala service road in Ward No.01
DATE OF TESTING	21.12.2017

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	477	477.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	23	22.50
7. Bitumen content in %	4.60	4.50
8. Average	4.55	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	25.18	5.28	5.28	94.72	90-100
13.2	150.6	31.57	36.85	63.15	56-88
4.75	172.4	36.14	72.99	27.01	16-36
2.36	42.55	8.92	81.91	18.09	4-19
0.3	42.5	8.91	90.82	9.18	2-10
0.075	10.5	2.20	93.03	6.97	0-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	26.5	5.30	5.30	94.70	90-100
13.2	157.2	31.44	36.74	63.26	56-88
4.75	176.2	35.24	71.98	28.02	16-36
2.36	84.2	16.84	88.82	11.18	4-19
0.3	30.5	6.10	94.92	5.08	2-10
0.075	11.5	2.30	97.22	2.78	0-8

AE-1

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Job No: CTCE/BBMP/BBU/W.No.01/BC/Bitumen/2017-18

22.12.2017

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

As per IS2386 and IRC:SP:11-1984

* Customer	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	roads at venakatala service road in Ward No 01,
DATE OF TESTING	22.12.2017

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	470	469.4
3. Weight of Asphalt and Mineral matter Extracted, g	30	30.6
4. Weight of Mineral Matter, g	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g (corrected)	30	30.6
7. Bitumen content in %	6.00	6.12
8. Average	6.06	

GRADATION AFTER EXTRACTION

TABLE - 1

SIEVE SIZE	Percent Passing, %		JOBMIX
mm	Sample 1	Sample 2	Gradation
19	100.00	100.00	100
13.2	85.50	87.20	79-100
9.5	75.10	82.50	70-88
4.75	60.50	62.40	53-71
2.36	45.20	50.10	42-58
1.18	48.20	40.50	34-48
0.6	30.20	30.50	26-38
0.3	25.40	22.54	18-28
0.15	13.50	15.20	12-20
0.075	6.21	7.25	4-10

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22.12.2017

Job No.: CTCE/BBMP/BBU/W.No.01/BC/AIV/2017-18

TEST REPORT ON IMPACT VALUE OF AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Hot mix plant, Bangalore.
* Type of Mix	:	Bituminous Concrete
Technical Reference	:	IS: 2386 (Part- 4)-1963 (RA-2011)
Date of Testing	:	22.12.2017

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	390	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	302	
4	Aggregate Impact value = percent fines 100* (W2/W1) percent	21.58	22.56	**22.07**

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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22.12.2017

Job No.: CTCE/BBMP/BBU/W.No.01/BC/Shape.T/2017-18

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	Mr. B. B. Umesh. No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	22.12.2017

Sl.No.	Description	Result
1	Flakiness Index	12.08%
2	Elongation Index	13.50%
3	Combined Flakiness & Elongation Index	25.58%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/BBU/W.No.01/BC/Sp_Wa/2017-18

22.12.2017

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B. B. Umesh.** No 345/1, Anjaneya temple Bettahalasoor, Bangalore.
* Name of Work	:	Improvements and asphalting to roads at venakatala service road and surrounding areas in Ward No.01 of Yelahanka Sub Division. BBMP, Bangalore.
* Reference	:	EE/YNK.D/EPMT-8/W.O/82 /2017-18 Dated: 23.06.2017
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -3)-1963 (RA-2011)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	22.12.2017

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2017	2015	2018	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1263	
4	Weight of saturated surface dry aggregate in air	W_3 g	2020	2021	2023	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	781	783	760	
6	Weight of oven dried aggregate	W_4 g	2010	2011	2015	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.574	2.568	2.651	2.598
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.607	2.602	2.680	2.629
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.50%	0.50%	0.40%	0.46%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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